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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/592,949	09/15/2006	Takashi Arakane	296367US0PCT	8692
22850 7590 07/23/2009 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER YANG, JAY				
ART UNIT 4132		PAPER NUMBER		
NOTIFICATION DATE 07/23/2009		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/592,949

Applicant(s)

ARAKANE ET AL.

Examiner

JACK YANG

Art Unit

4132

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF 298)
Paper No(s)/Mail Date ____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections – 35 USC § 102

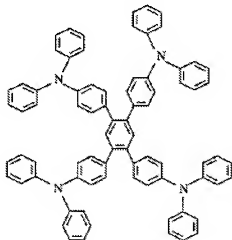
1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Shi et al. (US 5,554,450 A).

Regarding Claims 1 and 2, Shi et al. discloses material for an organic EL device (hole-transporting material) comprising the compound:



(6, col. 13) such that Ar = aryl group with 6 carbon atoms with a substituent (amino substituted phenyl group), $R_1 = R_2 =$ formula (3) such that $R_5 = R_6 = R_7 =$ hydrogen, $R_3 =$ hydrogen, and $R_4 =$ aryl group with 6 carbon atoms with a substituent (amino substituted phenyl group).

Regarding Claim 5, Shi et al. discloses an organic EL device with an anode and cathode, and an organic EL element disposed between the anode and cathode. The organic EL element has at least one hole transporting layer that includes a polyaromatic amine represented by compound shown above (abstract). Shi et al. discloses that in the organic EL device, electron-hole recombination occurs in the organic luminescent medium (106), which would make any of the hole-injecting (108), hole-transporting (110), and electron-injecting (112) layers where this occurs (as depicted in Fig. 1) the light-emitting layer.

Claim Rejections – 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

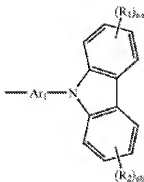
1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshiyama et al. (US 2004/0115476 A1).

Oshiyama et al. discloses material for an organic EL device represented by X_1 - $(A_1)_n$ (Formula 1, [0031]) where $X_1 =$

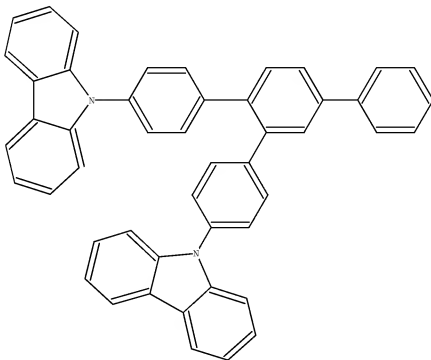


(formula (b), page 3) such that $n = 2$ and $A_1 =$



(Formula 2, [0032]). Oshiyama et al. discloses that Ar_1 in Formula 2 represents unsubstituted phenylene ([0149]) and $R_1 = R_2 =$ hydrogen ([0033]). Oshiyama et al. further discloses that R_{21} - $R_{24} =$ independently represent a hydrogen atom or an unsubstituted aryl group, provided that R_{21} - R_{24} are not all hydrogen atoms ([0034]). It would be obvious to one of ordinary skill in the art at the time of the invention to let R_{21} , R_{22} , $R_{24} =$ hydrogen and $R_{23} =$ phenyl group such that in formula (1) of the claim, $R_1 = R_2 =$ formula (2) with R_5 - $R_7 =$ hydrogen, $R_3 = R_4 =$ hydrogen, and $Ar =$ aryl group with 6 carbon atoms with no substituent (phenyl). The motivation would be that aromatic

substitutions of carbazoles and phenyl groups are known, and that Oshiyama et al. discloses that not all of R_{21} - R_{24} can equal hydrogen such that at least one of R_{21} - R_{24} should be a substituent, and such a substituent being a phenyl group ([0152]). This would result in a material for an organic EL device comprising a compound shown below:



4. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi et al. (US 5,554,450 A) in view of Hoag et al. (US 2003/0201415 A1).

Shi et al. discloses the (hole-transporting) material for an organic EL device according to Claim 1 and an organic EL device according to Claim 5 as shown above in the 35 U.S.C. 102(b) rejection. However, Shi et al. does not disclose a material for an organic EL device according to Claim 1, wherein the material is included as a host material in a light-emitting layer, nor an organic EL device according to Claim 5, wherein

the light-emitting layer contains a host material and a phosphorescent material, and the host material comprises the material for an organic EL device according to Claim 1.

Hoag et al. discloses an organic EL device with an anode (103), cathode (113), and a light-emitting layer (109, Fig. 1) that contains a host material and dopant, where the dopant = phosphorescent compounds ([0118]). Hoag et al. discloses that the host material can be hole-transporting material ([0118]), including compounds such as tertiary aromatic amines ([0068], [0084]-[0115]). It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the material for an organic EL device according to Claim 1 as disclosed by Shi et al. for the host material in the light-emitting layer of the organic EL device as disclosed by Hoag et al. The motivation would be that the material as disclosed by Shi et al. is also an aromatic tertiary amine with hole-transporting properties for an organic EL device, and such a substitution would provide a device with improved thermal stability (Shi et al., col. 3, lines 17-18) with predictable results.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shi et al. (US 5,554,450 A) in view of Nakamura et al. (US 6,509,109 B1).

Shi et al. discloses the organic EL device according to Claim 5 as shown above in the 35 U.S.C. 102(b) rejection. However, Shi et al. does not disclose a reducing dopant that is added to an interfacial region between the cathode and the organic thin film layer of the organic EL device.

Nakamura et al. discloses an interlayer (20) between the cathode and the electron-injecting layer (Fig. 6). The interlayer is made of material with electron injection

capabilities (col. 17, lines 32-33) such as alkali metal compounds (col. 17, lines 26-36). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate an interfacial region between the cathode and the organic thin film layer that contains reducing dopants such as alkali metal compounds as disclosed by Nakamura et al. to the organic EL device as disclosed by Shi et al. The motivation would be the enhancement of electron injection into the light-emission layer, which would result in increased efficiencies and light emission of the organic EL device.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JACK YANG whose telephone number is (571)270-1137. The examiner can normally be reached on Monday to Thursday from 8:30 am to 6:00 pm Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike LaVilla can be reached on 571-272-1539. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. Y./
Examiner, Art Unit 4132

/Milton I. Cano/
Supervisory Patent Examiner, Art Unit 4132